

Claims

[1] A structure for mounting a multifunctional vibrating actuator on a circuit board, the multifunctional vibrating actuator having a diaphragm, a magnetic circuit that is positioned facing the diaphragm and that forms a magnetic path, a suspension that supports the magnetic circuit, a housing that supports the diaphragm and the suspension, and a means of driving that produces magnetic drive that operates between the diaphragm and the magnetic circuit, and having terminals that are attached to the housing and that are electrically connected to the means of driving, in which multifunctional vibrating actuator a bracket is fixed to the surface of the circuit board by means of solder reflow and the housing is held in place by the bracket, such that the multifunctional vibrating actuator is mounted on the surface of the circuit board with the terminals electrically connected to the circuit board.

[2] A structure for mounting a multifunctional vibrating actuator on a circuit board, in which the mounting position of the multifunctional vibrating actuator relative to the circuit board is set on the surface near one end of the circuit board, and in which there is a projection on the surface of the bracket that faces the circuit board, the bracket being fixed by solder reflow to the surface of the circuit board while it is held in place on the surface of the circuit board by the projection.

[3] A structure for mounting a multifunctional vibrating actuator on a circuit board, in which the surface of the bracket that faces the circuit board has two or more convex contacts that contact solder applied to the surface of the of the circuit board and are fixed by solder reflow.

[4] A structure for mounting a multifunctional vibrating actuator on a circuit board, in which the multiple contacts are set at the edge of the bracket.

[5] A structure for mounting a multifunctional vibrating actuator on a circuit board, in which flat electrodes formed on the surface of the circuit board are formed with different ratios of length measurement to width measurement, and the positive electrode and the negative electrode have positions that are the same in the length direction.

[6] A structure for mounting a multifunctional vibrating actuator on a circuit board, in which flat electrodes formed on the surface of the circuit board are formed with different ratios of length measurement to width measurement, and the positive electrode and the negative electrode have positions that differ in the length direction.

[7] A structure for mounting a multifunctional vibrating actuator on a circuit board, in which the bracket is formed in a dish shape, with a bottom part and a rim that rises from the edge of the bottom part, the end of the housing of the multifunctional vibrating actuator being fitted to the rim to attach the bracket to the housing, there being a tab on the end of the housing that fits with the rim and multiple cut-outs in the rim that fit with the tab, the cut-outs being formed as a unit by cutting lower than the height of the cut-outs.

[8] A structure for mounting a multifunctional vibrating actuator on a circuit board, in which the flat surface of the bracket is formed with an unequal length/width ratio, and

there are on the surface of the bracket rim on the longer axis of the length/width ratio two or more convex contacts that contact the solder applied to the surface of the circuit board and that are fixed by solder reflow.

[9] Portable terminal equipment in which a multifunctional vibrating actuator is mounted using any of the mounting structures described in claims 1 through 8 to mount the multifunctional vibrating actuator on the circuit board.